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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/003,574	01/06/98	TRIPP	2818.21.1.1

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SHERIDAN ROSS
GARY J CONNELL
1700 LINCOLN STREET SUITE 3500
DENVER CO 80203

EXAMINER	
SCHNIZER, H	

ART UNIT	PAPER NUMBER
1652	5

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/003,574	Applicant(s) Tripp et al.
	Examiner Holly Schnizer	Group Art Unit 1652

☒ Responsive to communication(s) filed on *Jan 6, 1998*.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-24* is/are pending in the application.

Of the above, claim(s) *15 and 20-24* is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-7, 9-14, and 16-19* is/are rejected.

☒ Claim(s) *8* is/are objected to.

☒ Claims *1-24* are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-14, drawn to isolated proteins comprising an astacin metalloendopeptidase, classified in class 435, subclass 212.

II. Claim 15, drawn to an isolated antibody capable of binding an astacin metalloendopeptidase, classified in class 530, subclass 387.1.

III. Claims 20-22, drawn to a method of protecting an animal from disease by administering an astacin metalloendopeptidase protein, an isolated antibody which binds astacin metalloendopeptidase, or an inhibitor of astacin metalloendopeptidase, classified in class 424, subclass 94.67 and class 424, subclass 130.1.

IV. Claims 23 and 24, drawn to a method and kit to identify inhibitor compounds against astacin metalloendopeptidase, classified in class 424, subclass 4.

Claims 16-19 link Groups I and II. These Claims will be examined as part of Groups I or II if either one of them is elected.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are patentably distinct form each other. The astacin metalloendopeptidase protein of Group I, and the antibody of Group II do not require each other

for their practice; have separate utilities, such as the use of the peptidases of Group I for proteolysis versus use of the Group II antibodies to detect proteins *in vitro*; and are subject to separate manufacture and sale. The Groups have acquired separate status in the art and separate fields of search as further evidenced by their separate classification.

3. Invention I is related to inventions II and IV as product and processes of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (M.P.E.P. § 806.05(h)). In the instant case, the metalloendopeptidase of Group I can be used for its proteolytic activity which is a materially different process from the Group III process of animal treatment and the Group IV process of identifying inhibitors.

4. Invention II is related to invention III as product and process of use. The invention can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (M.P.E.P. §806.05(h)). In the instant case, the antibodies of Group II can be used for *in vitro* detection of proteins which is a materially different process from the Group III process of animal treatment.

5. Inventions II and IV are patentably distinct from each other. The antibody of Group II and the methods and kits for identifying inhibitors of Group IV do not require each other for their practice; have separate utilities, such as use of the Group II antibodies to detect proteins *in vitro*

versus use of the Group IV methods to identify inhibitors *in vitro*; and are subject to status in the art and separate fields of search as further evidenced by their separate classification.

6. Inventions III and IV are patentably distinct from each other. The methods to prevent animal disease of Group III, and the methods and kits for identifying inhibitors of Group IV do not require each other for their practice; have separate utilities, such as use of the methods of Group III for animal treatments versus the use of the Group IV methods to identify inhibitors *in vitro*; and are subject to separate manufacture and sale. The Groups have acquired a separate status in the art and separate fields of search as further evidenced by their separate classification.

7. Because these inventions are distinct for the reasons given above; have acquired a separate status in the art as shown by their different classification; and the search required for any one of the Groups is not required for any other, restriction for examination purposes as indicated is proper.

8. During a telephone conversation with Gary Connell on Thursday, February 25, 1999 a provisional election was made with traverse to prosecute the invention of Group I, Claims 1-14 and linking claims 16-19 as they apply to Group I. Affirmation of this election must be made by applicant in replying to this Office action. Claims 15, 20-22, 23, and 24 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

9. Applicants are reminded that upon cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 C.F.R. § 1.48 (b) if one or more of the

currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a diligently-filed-petition under 37 C.F.R. § 1.48 (b) and by the fee required under 37 C.F.R. § 1.17 (h).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. In Claim 10, the phrase "at least about 40% homology" is confusing since the result depends on the method used to determine homology (sequence gaps vs. mismatches, for example).

11. Claim 14 is rejected as failing to further limit the subject matter of Claim 1. In product claims, an intended use must do more than merely state the purpose or intended use in order to further limit the claims (MPEP 2111.02). Since the intended use does not result in a structural difference between the protein of Claim 14 and that of Claim 1 the intended use does not hold patentable weight and therefore, Claim 14 does not further limit Claim 1.

12. Claim 19 is indefinite for recitation of the phrase "said disease comprises heartworm" since it is unclear as to how a disease can be considered to "comprise" the causative agent behind it. Normally, diseases are considered to comprise the manifestations, symptoms, or conditions due to ill health.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-7, 12-14, and 16-19 are rejected under 35 U.S.C. 112, first paragraph as failing to provide an adequate written description of the invention.

13. Claims 1-7, 9, 12-14, and 16-19 are drawn to numerous parasite astacin metalloendopeptidase proteins as well as compositions comprising them, but the specification only discloses polypeptide sequences (SEQ ID Nos: 3-10, 31, and 34) encoded by nucleic acid molecules (SEQ ID Nos: 1-2, 29-30, and 32-33) isolated from *D. immitis*. The existence of additional parasite metalloendopeptidases is *a priori* unknown and, in the case that they exist, the similarity between these additional parasite metalloendopeptidases and the disclosed D. immitis metalloendopeptidase is unpredictable. The written description requirement for a claimed genus may be achieved by sufficient description of a representative number of species by relevant identifying characteristics (Eli Lilly, 43 USPQ2d 1398, 1406 (CAFC 1997)). The "representative number" is inversely related to the predictability of the art. In the present case, the similarity of

additional species, which may or may not exist, to the disclosed species is unpredictable therefore, adequate written description of the genus cannot be achieved by disclosing only one species within the genus.

14. Claims 1-7, 9-14, and 16-19 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. With regard to Claims 1-7, 9, 12-14, and 16-19, the specification does not enable one skilled in the art to make and use metalloendopeptidases beyond that from *D. immitis.* While it is possible to use the disclosed *D. immitis* nucleic acid sequences to screen other parasites for similar sequences, the specification fails to provide guidance regarding the existence and location of additional parasite metalloendopeptidase nucleic acids. As noted above, it is *a priori* unknown as to the existence of additional parasite metalloendopeptidases. Furthermore, it is unpredictable as to the level of similarity between the disclosed *D. immitis* nucleic acids and those encoding other parasite metalloendopeptidases, if they exist. Accordingly, it is unpredictable as to what conditions, if any, are suitable for detection and isolation of additional parasite metalloendopeptidase encoding sequences. Since it is not routine in the art to screen large numbers of nucleic acids and hybridization conditions where the expectation of obtaining similar activity/function is unpredictable based on the instant disclosure, the skilled artisan would require guidance, such as information regarding the location, size, and sequence of additional parasite metalloendopeptidase encoding genes, in order to make and use the enzymes in

a manner reasonably correlated with the scope of claims 1-7, 9, 12-14, and 16-19. Without such guidance, the experimentation left to those skilled in the art is undue.

15. With regard to Claims 10 and 11, the specification has failed to provide enablement for the use of the invention claimed therein. Claim 10 is drawn to proteins that are at least about 40 percent homologous to a disclosed sequence while Claim 11 is drawn to proteins comprising at least a portion of one of a number of disclosed sequences. The specification fails to enable the disclosed sequences referenced in the claims because it is unclear as to which amino acids of SEQ ID Nos 31 and 34 and which portions of SEQ ID Nos 3-10, 31, and 34 are required to maintain metalloendopeptidase activity. While the claims encompass vast numbers of protein fragments, the specification only discloses a few sequences. Despite the knowledge in the art for the production of protein fragments, the specification fails to provide guidance regarding which of these possesses various activities such as eliciting an immune response, proteolyzing peptide bonds, and protecting against disease. Because accurate predictions of a protein's structure from mere sequence data are limited and detailed information regarding the structural and functional requirements of a parasite astacin metalloendopeptidase is lacking, it is unpredictable as to which fragment possesses any given activity. Since it is not routine in the art to screen large numbers of fragments where the expectation of obtaining activity/function is unpredictable based on the instant disclosure, additional guidance is needed in order to make and use the proteins in a manner reasonably correlated with the scope of the claims. Without such guidance, the experimentation left to those skilled in the art is undue.

16. Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Schnizer whose telephone number is (703) 305-3722. The examiner can normally be reached Monday-Friday from 7:30 a.m. to 4:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Robert A. Wax, can be reached at (703) 308-4216. The fax phone number for Official Papers to this Group is (703) 308-4242. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0196.

HS
Holly Schnizer, Ph.D.
March 11, 1999

Robert A. Wax
Supervisory Patent Examiner
Technology Center 1600